

Gibier (Paul)

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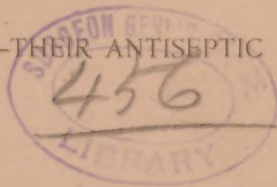
THREE COMMUNICATIONS

By PAUL GIBIER, M.D.,

OF THE UNIVERSITY OF PARIS,

FORMERLY INTERNE OF THE HOSPITALS OF PARIS, ASSISTANT IN PATHOLOGY AT THE PARIS MUSEUM,
DIRECTOR OF THE NEW YORK PASTEUR INSTITUTE, ETC., ETC.

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1. A NEW THEORY ABOUT TEMPERAMENTS.
 2. PEROXIDE OF HYDROGEN; OZONE—THEIR ANTISEPTIC PROPERTIES.
 3. ON HYDROPHOBIA:
Should Pasteur's method of inoculation against the risk of Hydrophobia be practiced at a late period after an injury by a mad dog?



*Gift of Compliments
of Paul Gibier*

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NEW YORK BACTERIOLOGICAL INSTITUTE

(INCORPORATED 1890)

FOR THE STUDY OF CONTAGIOUS DISEASES.

PASTEUR INSTITUTE.

MEDICAL AND SCIENTIFIC BOARD:

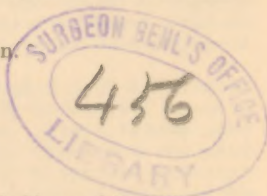
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and Sec. of the Medical Board.

NOTE :—Analysis (Chemical and Microscopical) of urine and sputa ;
histological examination of pathological productions will be made
at the Laboratory of the Institute.

Private lectures on Bacteriology will be given.

Pasteur's Treatment against Hydrophobia.

Koch's Treatment against Tuberculosis.



Send pathological specimens in small pieces of about half a cubic inch,
in alcohol.

Pieces of the brain or cord of hydrophobic dogs, in pure glycerine.

Sputa : in small phials, well corked.

Urine : about half a pint, securely packed.

178 WEST 10th STREET,

NEW YORK.

A NEW THEORY ABOUT TEMPERAMENTS.¹

By PAUL GIBIER; M.D.,

FORMERLY INTERNE OF PARIS HOSPITALS AND ASSISTANT IN PATHOLOGY AT THE
PARIS MUSEUM; DIRECTOR OF THE NEW YORK PASTEUR INSTITUTE.

Great importance was attached by the ancients to the study of temperaments. In this connection it is well to observe that certain schools distinguished in special form four principal temperaments more or less susceptible of affiliation, viz., "the sanguine, the nervous, the bilious, and the lymphatic." Nowadays—while recognizing that the physiological basis varies with individuals, as is shown by the unequal distribution of maladies, or, in other words, the difference of susceptibility to infection—sufficient importance does not seem to be attached to what was formerly designated as "the composition of humors."

Were it, nevertheless, demonstrated that a difference in composition, however slight, was capable of preventing the development of certain ailments, and were it possible for the medical man to bring about such a modification in the quality of the humors of the human body, or, to use a more modern phraseology, in the chemical composition of the center of development of the germs of these ailments, would it not be of advantage in a great number of cases to know in a temperament—*i. e.*, from this our special point of view—the "composition" of a patient?

More remains to be said on this score for if, in a curative sense, this knowledge could be utilized, how much more valuable would it not be in the preventive sense? The knowledge of a temperament once acquired, notably by the study of its ancestry—for, in my opinion, the human body inherits to a large extent the basis from which a malady takes its development rather than the malady itself—a temperament, I repeat, having been once determined, would it not be possible by an appropriately specified diet to prevent the growth of cancer, of tuberculosis, of nervous ailments, of acute or chronic rheumatism, and so forth?

Recent studies made in connection with infectious germs enable one to answer this question in the affirmative. Do we not know, for instance, that an infinitesimal proportion of chloride of silver is sufficient to check the development of certain inferior organisms (Raulin), that glycerin introduced into a culture medium otherwise inert renders it capable of giving nourishment to the *Bacillus tuberculosis* (Roux and Nocard)? Do we not, moreover, know that when we have neglected to slightly alkalinize, or at least to neutralize, an acid culture medium, the majority of pathogenic microbes decline to develop, even when but traces of acidity exist?

If it needs so little to cause an inert medium to become unfit for the development of infectious germs, what may we not expect from the cellulæ of our tissues, which are struggling actively, and I venture to say intelligently, for the preservation of their collective existence which constitutes our own as a whole?

I do not intend to dwell on this point. It is in order to place my theory on record that I make the present communication. It must necessarily be short, and I must be forgiven if what follows savors of a somewhat absolute form. I must, however, state that for the time being I merely submit my theory as a simple hypothetical one which requires confirmation, although the results obtained by me in its practical application are most satisfactory. I am fully aware that the distance between a theory of this nature and the facts to be established is great; but he who sows or plants must not look for a crop the next day.

Numerous observations made upon my patients, and experiments made both at my clinic and in my laboratory, allow me to advance the statement that there exist three temperaments or constitutions of the animal body:

1. The alkaline temperament.
2. The acid temperament.
3. The neutral temperament.

¹ Read before the Tenth International Medical Congress, Berlin, August, 1890, and published in the *New York Medical Journal*, October 18, 1890.

As may be observed, I am comparing the chemical composition of the animal organism to that of all other composite bodies which we study in nature.

All substances, from a chemical standpoint, are alkaline, acid, or neutral; why should not the same hold good of those living animal substances whose functions are so varied? The blood is alkaline, and yet do not the cells of the glands, the muscles, and other tissues secrete liquids that are more or less acid according to individuals? These liquids are taken up again by the blood and eliminated by the sudoriparous glands, by the kidneys, etc., or partly deposited within the organs. But the limits of this note do not allow of my carrying this point any further.

And now let us study temperaments:

1. *The Alkaline Temperament.*—People who are possessed of this temperament are but slightly or not at all predisposed to so called arthritic affections; they have no eczema, no psoriasis, varices but seldom, and rarely any vascular or cardiac affections. They are not subject to cancer in its various forms. Their secretions are but slightly acid and they never or seldom suffer from sourness of the stomach (pyrosis). The women are more fertile.

Rheumatism, especially in the chronic form, as well as gout, is unknown among the alkaline. On the other hand, they are apt to acquire other maladies easily, and although, in case they have the chance to live far from populous centers, they may give instances of exceptional longevity, they commonly, when living in cities, show a peculiar aptitude for the acquisition of chest troubles, and more especially of pulmonary tuberculosis. This is especially the case when their means do not allow them to "acidify" themselves by indulgence in animal food. They are also subject to all forms of tuberculosis, and notably to scrofulosis.

Among the many tubercular subjects I have examined I have as yet met with none who presented, in their personal and family history, the unmistakable signs of "acidism," which I shall describe further on. Pertinent to this, I will here state that, considering, as I do, that in animal food and moderate quantities of spirituous liquors we have a potent means toward the acidifying of tissues, I do not hesitate to affirm that, in my opinion, a vegetarian diet (which, on the other hand, tends to alkalinize), together with a complete avoidance of fermented drinks, jeopardizes the life of alkaline subjects who live in populous centers, where the germs of tuberculous contagion are so numerous.

Among alkaline animals are the herbivora, the vaccine race especially, and it is well known how easily horned cattle become tubercular when stabled in large cities.

2. *The Acid Temperament.*—This may be observed in people who do not, any more than the alkaline subjects, present any external characteristic appearance; everything at first takes place within the body. It is but at a later period that special deformities of certain articulations, or that certain apparent cutaneous affections, may lead to their easy recognition. Yet during youth acid subjects may have facial acne. Their gastric juice is markedly acid, and more especially during adolescence they frequently complain of pyrosis. Hence, under careful hygienic direction, they are less apt than the other class, during cholera epidemics or in yellow-fever districts, to acquire these maladies; the marked acidity of their gastric juice causes the destruction of the infecting bacilli prior to their passage into the intestines.

Acid subjects are not in danger of tuberculosis or of scrofula, but, according as their peculiarity of temperament is more or less marked, they may suffer from eczema or any of the eruptions or cutaneous affections which to-day are still termed arthritic and herpetic. According to the mode of life the affections vary; the acidism may be manifested in the form of a subacute rheumatism, with repeated attacks, or of a chronic variety of this disease. A meat diet added to a liberal use of alcoholics is rapidly productive of gout in acid temperaments (more especially when exercise is not taken in order to increase the secretions) whenever heredity has, as it were, polarized the acid tendency in that direction.

It is especially among the subjects of "acidism" that we observe hæmorrhoids, varices, and the eczema of the legs which so frequently accompanies them. In these people we also find headaches (migraine) and the neuralgic affections depending upon

a cellular development of the central nervous system (general paralysis, sclerosis, locomotor ataxia, etc.), together with neuropathic affections, hysteria, etc.

"Acidism" would seem to develop asthma, pulmonary emphysema, chronic dry coryza, etc., in the respiratory system, while it appears to lead to aneurysms, to cerebral hæmorrhages, arterial sclerosis, atheroma, angina pectoris, etc., in the circulatory apparatus.

"Acidism" constitutes a favorable soil for the development of cancer and malignant epithelial productions in general. The organs which are most frequently attacked are the stomach, a viscus whose contents are usually acid, and the uterus, which occasionally secretes an acid mucus; uterine cancer is frequently observed in nulliparæ. On the other hand, we know that acidity of the uterine mucus is a common cause of sterility.

Among the animals that are of an acid temperament we must class the carnivora (in a general manner), and particularly the dog.

It may be for this reason that the blood of this animal, when injected into the system of herbivora (which are alkaline) that have previously been inoculated with tubercular material, has appeared to retard the infection and the death of the subjects of the experiment (Richet). The dog is one of the rare domestic animals in which rheumatism may be observed.

3. *The Neutral Temperament.*—According to my theory, this would correspond to the temperate temperament of the ancients. Persons gifted with it show no marked signs belonging to the two other classes (alkaline and acid), and their state is really the normal one. They may approach either of them according to their alimentation and their mode of life. According to my observations, these people are more easily cured than the "acids" when they are attacked by certain "acidic" affections. This is equally true of the alkaline affections. This must be due to the ease with which their temperament may be modified.

Each one of these temperaments (alkaline, acid, neutral) may be met with among those whom the ancient humoralists were wont to term bilious, atrabiliary, sanguine, lymphatic, nervous, athletic, etc. These definitions describe rather the external appearance, and even the moral character, than the true temperament—that is to say, the internal constitution.

Temperaments are inherited in various degrees according to ancestors and the combinations of breeding. The marked alkaline and acid dispositions are difficult to correct and modify. The neutral, on the other hand, may be altered in either direction according to the mode of life of its possessor.

I do not wish to insist at present upon the practical deductions which may be drawn from what precedes. This will allow me to hope for a little more indulgence in case I have wandered upon a false track. It is, however, a matter that may be studied more thoroughly in time.

PEROXIDE OF HYDROGEN AND OZONE.

THEIR ANTISEPTIC PROPERTIES.

Read before the International Medical Congress, held at Berlin, Germany, on the 7th of August, 1890. Published by *Medical News* of Philadelphia, October 25th, 1890. Pp. 416-418.

By DR. PAUL GIBIER, *Director of the Pasteur Institute of New York.*

*GENTLEMEN:

Since the discovery of Peroxide of Hydrogen by Thenard, in 1818, the therapeutic applications of this oxygenated compound seem to have been neglected both by the medical and the surgical professions; and it is only in the last twenty years that a few bacteriologists have demonstrated the germicidal potency of this chemical.

Among the most elaborate reports on the use of this compound may be mentioned those of Paul Bert and Regnard, Baldy, Péan and Larrivé.

Dr. Miguel places Peroxide of Hydrogen at the head of a long list of antiseptics, and close to the silver salts.

Dr. Bouchut has demonstrated the antiseptic action of Peroxide of Hydrogen, when applied to diphtheritic exudations.

Prof. Nocard, of Alfort, attenuates the virulence of the microbe symptomatic of carbuncle, before he destroys it, by using the same antiseptic.

Dr. E. R. Squibb,¹ of Brooklyn, has also reported the satisfactory results which he obtained with Peroxide of Hydrogen in the treatment of infectious diseases.

Although the above-mentioned scientists have demonstrated by their experiments that Peroxide of Hydrogen is one of the most powerful destroyers of pathogenic microbes, its use in therapeutics has not been as extensive as it deserves to be.

In my opinion the reason for its not being in universal use is the difficulty of procuring it free from hurtful impurities. Another objection is the unstableness of the compound, which gives off nascent oxygen when brought in contact with organic substances.²

Besides the foregoing objections the surgical instruments decompose the peroxide, hence, if an operation is to be performed, the surgeon uses some other antiseptic during the procedure, and is apt to continue the application of the same antiseptic in the subsequent dressings.

Nevertheless, the satisfactory results which I have obtained at the Pasteur Institute of New York with Peroxide of Hydrogen, in the treatment of wounds resulting from deep bites, and those which I have observed at the French clinic of New York, in the treatment of phagedenic chancres, varicose ulcers, parasitic diseases of the skin, and also in the treatment of other affections caused by germs, justify me in adding my statement as to the value of the drug.

But, it is not from a clinical standpoint that I now direct attention to the antiseptic value of Peroxide of Hydrogen. What I now wish is merely to give a full report of the experiments which I have made on the effects of Peroxide of Hydrogen upon cultures of the following species of pathogenic microbes: *Bacillus anthracis*, *bacillus pyocyaneus*, the bacilli of typhoid fever, of Asiatic cholera, and of yellow fever, *streptococcus pyogenes*, *micro-bacillus prodigiosus*, *bacillus megaterium*, and the bacillus of osteomyelitis.

The Peroxide of Hydrogen which I used was a 3.2% solution, yielding fifteen times its volume of Oxygen; but this strength was reduced to about 1.5%, corresponding to about eight volumes of Oxygen, by adding the fresh culture containing the microbe upon which I was experimenting. I have also experimented upon old cultures loaded with a large number of the spores of the *bacillus anthracis*. In all cases my experiments were made with a few cubic centimetres of culture in sterilized test-tubes, in order to obtain accurate results.

The destructive action of Peroxide of Hydrogen, even diluted in the above proportions, is almost instantaneous. After a contact of a few minutes, I have tried to cultivate the microbes which were submitted to the peroxide, but unsuccessfully, owing to the fact that the germs had been completely destroyed.

My next experiments were made on the hydrophobic virus in the following manner:

I mixed with sterilized water a small quantity of the medulla taken from a rabbit that had died of hydrophobia, and to this mixture added a small quantity of Peroxide of Hydrogen. Abundant effervescence took place, and, as soon as it ceased, having previously trephined a rabbit, I injected a large dose of the mixture under the dura mater. Slight effervescence immediately took place and lasted a few moments,

¹ *Gaillard's Medical Journal*, March, 1889.

² The Peroxide of Hydrogen that I use is manufactured by Mr. Charles Marchand, of New York. This preparation is remarkable for its uniformity in strength, purity and stability.

but the animal was not more disturbed than when an injection of the ordinary virus is given. This rabbit is still alive, two months after the inoculation.

A second rabbit was inoculated with the same hydrophobic virus which had not been submitted to the action of the peroxide, and this animal died at the expiration of the eleventh day with the symptoms of hydrophobia.

I am now experimenting in the same manner upon the bacillus tuberculosis, and if I am not deceived in my expectation, I will be able to impart to the profession some interesting results.

It is worthy of notice that water charged, under pressure, with fifteen times its volume of pure oxygen has not the antiseptic properties of Peroxide of Hydrogen. This is due to the fact that when the peroxide is decomposed nascent oxygen separates in that most active and potent of its conditions next to the condition, or allotropic form, known as "Ozone." Therefore it is not illogical to conclude that ozone is the active element of Peroxide of Hydrogen.

Although Peroxide of Hydrogen decomposes rapidly in the presence of organic substances, I have observed that its decomposition is checked to some extent by the addition of a sufficient quantity of glycerin; such a mixture, however, cannot be kept for a long time, owing to the slow but constant formation of secondary products, having irritating properties.

Before concluding I wish to call attention to a new oxygenated compound, or rather ozonized compound, which has been recently discovered and called "Glycozone" by Mr. Marchand.

This Glycozone results from the reaction which takes place when glycerin is exposed to the action of ozone under pressure—one volume of glycerin with fifteen volumes of ozone produces Glycozone.

By submitting the bacillus anthracis, pyocyaneus, prodigiosus, and megaterium to the action of Glycozone, they were almost immediately destroyed.

I have observed that the action of Glycozone upon the typhoid fever bacillus, and some other germs, is much slower than the influence of Peroxide of Hydrogen.

In the dressing of wounds, ulcers, etc., the antiseptic influence of Glycozone is rather slow if compared with that of Peroxide of Hydrogen, with which it may, however, be mixed at the time of using.

It has been demonstrated in Pasteur's laboratory that glycerin has no appreciable antiseptic influence upon the virus of hydrophobia; therefore, I mixed the virus of hydrophobia with glycerin, and at the expiration of several weeks all the animals which I inoculated with this mixture died with the symptoms of hydrophobia.

On the contrary, when glycerin has been combined with ozone to form Glycozone, the compound destroys the hydrophobic virus almost instantaneously.

Two months ago, a rabbit was inoculated with the hydrophobic virus, which had been submitted to the action of this new compound, and the animal is still alive.

I believe that the practitioner will meet with very satisfactory results with the use of Peroxide of Hydrogen for the following reasons:

1. This chemical seems to have no injurious effect upon animal cells.
2. It has a very energetic destructive action upon vegetable cells—microbes.
3. It has no toxic properties; five cubic centimetres injected beneath the skin of a guinea-pig do not produce any serious result, and it is also harmless when given by the mouth.

As an immediate conclusion resulting from my experiments, my opinion is, that Peroxide of Hydrogen should be used in the treatment of diseases caused by germs, if the microbial element is directly accessible; and it is particularly useful in the treatment of infectious diseases of the throat and mouth.

SHOULD PASTEUR'S METHOD OF INOCULATION AGAINST THE RISK OF HYDROPHOBIA BE PRACTICED AT A LATE PERIOD AFTER AN INJURY BY A MAD DOG?¹

By DR. PAUL GIBIER, DIRECTOR OF THE PASTEUR INSTITUTE OF NEW YORK.

THE value of inoculations according to the Pasteur method, as a preventive of hydrophobia, being no longer a matter of serious contest, one question remains to be solved: How long after the bite of a mad dog can the inoculations be beneficial?

Evidently the sooner a person is submitted to the preventive treatment after having been bitten, the better it is; but suppose a man was bitten several months, or even a year, ago, are we in a position to assert that it would be of service to subject him to the inoculations?

Relying upon a small number of observations that I lately made, and at the same time bearing in mind that hydrophobia may be developed a year or more after the introduction of the virus through the bite, I believe that the advantages of preventive inoculations to persons who are in this predicament cannot be denied.

Following are a few observations taken from the records of the New York Pasteur Institute, which would seem to show that even at the first apparition of the prodromata of the disease, it is still possible, several months after the bite, to stop the invasion of the germs along the course of those nervous fibers which start from the place of the wound to the nerve centers, and, so to speak, harden the latter against the hydrophobic microbes.

The first case in which a long delay had elapsed between the bite and the moment at which the patient came to be treated was that of a physician, of Carlinville, Ill.—Dr. C. J. C. F. He had been bitten five months previously, and felt some peculiar sensations at the seat of the scar. These occurred in the right leg, and from this point up along the limb. These sensations became better marked, and proved to be painful enough to awaken the patient in the middle of the night.

The same dog—which presented the ordinary signs of hydrophobia—bit, one day after, Dr. F.'s daughter upon her right side, and inflicted a very severe wound. At the same time that her father felt the signs just described, the young girl felt a disagreeable itching on the spot of the cicatrix of her wound, and was brought by her father to the Institute for treatment. Thus, five months and a half after the bite, both were regularly treated for fifteen days, and received an intensive form of treatment, which ended on the 1st of May last.

One month after, June 2d, Dr. F. wrote me: "My daughter and I are getting along nicely; the pains and other peculiar sensations I complained of in my leg are gone. My daughter complains no more, so I think the cure is complete." And two months after the end of the treatment Dr. F. wrote me again that all was going on favorably.

In these two instances, and especially in Dr. F.'s case, if reliance is placed upon what we know of the prodromata of hydrophobia, the symptoms observed would seem to indicate a foreshadowing of others, more serious, and thought to be so by the patient in the light of his professional experience. I think that it is not unreasonable to believe that without the anti-hydrophobic injections the case might have proved unfavorable.

The results in these cases encouraged me to pursue the Pasteur method in other instances, and, so far, I have not had any reason to regret my course.

In a third case, a man from Walleston, Mass., came, April 18, to seek my advice. He had been bitten four months before in the hand, by his own dog; fifteen minutes after, his wounds were washed with a strong solution of carbolic acid.

The day following, the dog bit a companion, who died with the symptoms of hydrophobia. On the 12th of March the dog was killed. I treated the patient from April 18 to May 2. Today he is well.

¹ Read before the International Medical Congress of Berlin, 1890, and published in the *Med. Times and Register*, Philadelphia, October, 1890.

A fourth and fifth case refer to two patients who were bitten—the one one month, and the other nearly two months, before. Both are doing well, after a lapse of more than forty days.

A sixth case refers to a boy bitten, fifteen days previously, in the hand. Since the treatment, which ended on the 28th of June, the boy has remained perfectly free from all symptoms of hydrophobic poisoning.

The seventh case is that of a man who came from the province of Ontario, Canada, and who had been bitten thirty-five days before any treatment was commenced. This man was decidedly prostrated when he came; his wounds were severe in both hands; they had not been cauterized. Three animals—two pigs and a cow—bitten by the same dog, died with hydrophobia a few days before the patient presented himself for treatment. Since the end of June he has remained well.

The eighth case is almost similar to the latter, and occurred at the same time. A boy, twelve years of age, came three weeks after having been bitten. A dog bitten by the same animal died with symptoms of hydrophobia just before the patient left his home to come to the Institute. So far he is doing well.

The ninth case is interesting, although the delay was but eleven days between the bite and the first inoculation. A young girl felt a tingling which she described as "sparks" in the tips of her fingers and in the forearm—the seat of the bite. There was free hemorrhage from the wound, and it had not been cauterized. The dog displayed marked symptoms of hydrophobia before dying.

The subject of the tenth observation was a man from Brunswick, Maine, inoculated for the first time seven weeks after a severe bite, inflicted by a dog who had bitten two other men; one of them died thirty-two days afterward with the ordinary symptoms of rabies. The treatment ended on the 12th of July.

Two other patients are still under observation; one, an old man, bitten ten months previously by his own dog, who died a few days after with symptoms of hydrophobia. The little finger, upon which the bite had been inflicted, was neither washed nor cauterized. From the seat of the wound, extending to the elbow, the patient felt acute pains, which became worse a few days before he submitted to treatment. Under the influence of the preventive injections, the pains disappeared almost entirely on or about the tenth day.

Finally, another patient, who presents also some interest, is a young lady, twenty-four years of age, bitten thirty-two days before she came to the Institute. For one week she felt worried, without cause, and experienced some pains, extending from the bitten finger to the elbow. She complained, also, of peculiar and rather painful burning sensations in her throat and in her tongue. After six days' treatment she felt better; on the tenth day she was still better, and the painful sensation of the arm appeared only now and then, but greatly lessened in intensity. At the end of the treatment the pains disappeared. The patient had been inoculated three times daily during three consecutive days, and on the fourth day was subjected to a most virulent injection. I believe that the progressive disappearance of the pains must dispel any idea that it was due to mere suggestion.

My purpose is not to advance any statement that there is always time to treat successfully a person who is threatened with hydrophobia after a certain period has elapsed; but I believe that the cases that I have heretofore related, especially if they all prove ultimately successful, may sustain my views; that is, if the inoculations can be performed at least one month before the period at which the invasion of the nerve centers, by the germs, should have occurred, the probabilities are that a fatal end of the hydrophobic infection will be prevented.

NOTE.—After the reading of this communication a discussion took place, not about the value of the treatment, for that is admitted by every physician who has any experience of the matter, but about the details and modifications applied to the method of inoculations.

Prof. Babès, of Bucharest, recorded several observations and experiments which prove beyond all contest the thorough efficacy of the Pasteur method of treatment

against hydrophobia. Among these observations he related a very striking one: In the environs of Bucharest a mad wolf bit thirteen persons and thirty animals—oxen, horses, pigs, dogs. The thirty animals died of hydrophobia; a man who neglected to go to the Pasteur Institute of Bucharest to be treated died with the same symptoms; another one died from the wounds inflicted by the wolf; but the eleven persons who received the Pasteur inoculations are still alive, after nearly two years. Those who pretend not to be convinced by such examples, which have been multiplied a great many times, would probably be quite anxious to receive the treatment if they were themselves in danger of contracting the dreadful disease.

ANOTHER OBSERVATION.

Since the opening of the New York Pasteur Institute (February 18, 1890) twenty-three cases of death caused by rabies, in the United States, have come to my knowledge. It is very probable that other cases have occurred, which have either not been recognized or have escaped my observation. These twenty-three cases are divided as follows:

In April, one case (Kentucky); in May, three cases (Illinois, see the *Chicago Herald* of May 31; in June, six cases (New York, Illinois, Nebraska, Maine, Massachusetts [2]); in July two cases (Pennsylvania, Ohio); in August, two cases (New York); in September, five cases (Pennsylvania, Kentucky, Arizona [3]); in October, three cases (Connecticut, Massachusetts, Georgia); in November, one case (Georgia).

Owing to the attacks which are still being made upon Pasteur's method, despite the experimental and clinical proofs of its efficacy, I think I may assert that these twenty-two people who died since April 20 last, would still be living if they had been preventively treated.

The 130 people, coming from many States, who have been treated at the New York Pasteur Institute since its opening, are all in excellent health today. The greater number of them had been bitten by animals which were positively recognized to be suffering from rabies.

November, 1890.

BY THE SAME AUTHOR.

IN FRENCH

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- ib. Birds Contract and may Transmit it, but Recover. ib.
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